

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
30 October 2003 (30.10.2003)

PCT

(10) International Publication Number
WO 2003/089869 A3

(51) International Patent Classification⁷: **F41H 5/04**

(21) International Application Number:
PCT/US2003/012233

(22) International Filing Date: 17 April 2003 (17.04.2003)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/373,755 17 April 2002 (17.04.2002) US

(71) Applicant (for all designated States except US): **ARMOR
SYSTEMS INTERNATIONAL** [US/US]; 110 Columbia
Street, Vancouver, WA 98660 (US).

(71) Applicant and

(72) Inventor: **HENRY, JAMES J.M.** [US/US]; 6995 S.W.
Highland, Wilsonville, OR 97070 (US).

(74) Agent: **WOLFE, James**; Ganz Law, P.C., P.O. Box 10105,
Portland, OR 97296 (US).

(81) Designated States (national): AE, AG, AL, AM, AT, AU,
AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU,

CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,
GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC,
LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW,
MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE,
SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ,
VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (regional): ARIPO patent (GH, GM,
KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW),
Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),
European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE,
ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO,
SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM,
GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

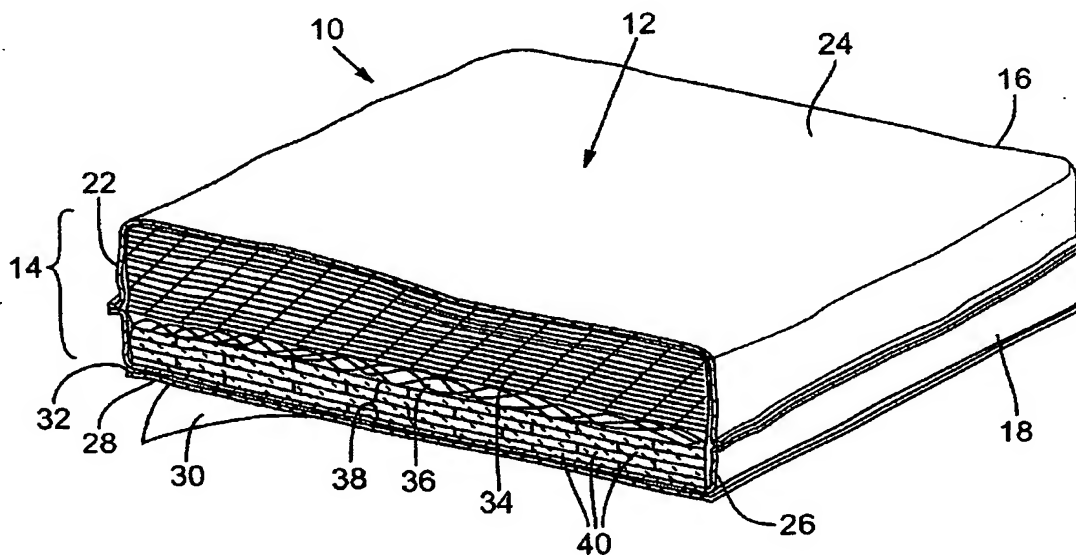
Published:

— with international search report
— before the expiration of the time limit for amending the
claims and to be republished in the event of receipt of
amendments

(88) Date of publication of the international search report:
22 April 2004

[Continued on next page]

(54) Title: **ARMOR SYSTEM**



(57) Abstract: An armor system (10) is provided having an outer case (12) of woven or unidirectional fibers filled with one or more protective materials. The outer case (12) includes a pressure sensitive adhesive (32) bonded to one side for quick and easy application to a body to be protected. The protective materials may include ceramic material which may be in the form of ceramic tile sheets (44, 46, 50), loose ceramic balls (52), or perforated tiles (48), multiple layers of woven or unidirectional cloth (34), and steel mesh (36). These materials may be used alone or in any combination. A tensioned energy layer (60) and/or a self-healing layer (58) may be provided to fill a void created by a projectile.



For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US03/12233

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : F41H 5/04
US CL : 89/36.02; 2/2.5

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
U.S. : 89/36.02; 2/2.5

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
East text search

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 3,974,313 A (JAMES) 10 August 1976 (10.08.1976, see Figs. 1-3 and associated written description.	1, 3, 27, 39, and 43
X	US 6,298,765 B1(DVORAK) 09 October 2001 (09.01.2001), see entire disclosure	1, 13, 29, 33, 38, 41, 43-44, and 47
X	US 4,911,061 A (PIVITT ET AL.) 27 March 1990 (27.03.1990), see Fig. 5 and Col. 3, Lines 4-7, 55-64; Col. 4, Lines 14-19	1-4, 27-28, 37, 39-41, 43, and 46
Y	US 4,648,136 A (HIGUCHI) 10 March 1987 (10.03.1987), see Figs. 1A, 2A	10, 22, 30, 36, 39, 45, and 48

☐ Further documents are listed in the continuation of Box C.

☐ See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"B" earlier application or patent published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T"

later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X"

document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y"

document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&"

document member of the same patent family

Date of the actual completion of the international search

12 September 2003 (12.09.2003)

Date of mailing of the international search report

27 FEB 2004

Name and mailing address of the ISA/US

Mail Stop PCT, Attn: ISA/US
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

Facsimile No. (703)305-3230

Authorized officer

Stephen M. Johnson

Telephone No. (703) 306-4158

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US03/12233

Box I Observations where certain claims were found unsearchable (Continuation of Item 1 of first sheet)

This international report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claim Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claim Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
3. ☐ Claim Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of Item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:
Please See Continuation Sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☒ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest ☐ The additional search fees were accompanied by the applicant's protest.
☐ No protest accompanied the payment of additional search fees.

BOX II. OBSERVATIONS WHERE UNITY OF INVENTION IS LACKING

Lack of unity invention is present because numerous distinct species are present in a single application (37 CFR 1.475).

Species A is illustrated in Fig.1. Species B is illustrated in Fig.6. Species C is illustrated in Fig.7. Species D is illustrated in Fig.12. Species E is illustrated in Fig.16. Species F is illustrated in Fig.17. Species G is illustrated in Fig.18. Species H is illustrated in Fig.19.